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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/540,211	06/20/2005	Hans-Joachim Quenzer	1033033-000027	5248

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EXAMINER

BEL'YAEV', YANA

ART UNIT	PAPER NUMBER
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1791

NOTIFICATION DATE	DELIVERY MODE
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10/30/2009

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/540,211	Applicant(s) QUENZER ET AL.	
	Examiner YANA BELYAEV	Art Unit 1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 July 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 and 17-20 is/are pending in the application.
- 4a) Of the above claim(s) 12-15 and 17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 and 18-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The applicant is correct that the examiner inadvertently stated in the status of the claims indicated in paragraph 2 of the Official Action dated 21 March 2009, as well as the status of the claims appearing on the Office Action Summary dated 21 March 2009, is incorrect. At the time of the Official Action dated 21 March 2009, claims 1-15 and 17-19 were pending, claims 12-15 and 17 withdrawn from consideration, and claim 16 cancelled. However, the examiner inadvertently stated that claims 1-11, 18 and 19 were pending and claims 12-17 were withdrawn from consideration.

The examiner apologizes for any inconvenience this inadvertent error could have caused.

Election/Restrictions

1. The applicant stated in the response filed 16 March 2009 that claim 15 had been amended in a manner which introduces language therein reciting common technical features with Groups I and II, with the result that Groups I, II, and II are all directed to an invention possessing a common technical feature that is neither disclosed or suggested by the prior art. The applicant therefore respectfully requested reconsideration and withdrawal of the restriction requirement, rejoinder and examination of claims 1-15 and 17-19 (claim 16 had been cancelled) together in a single application.

However, the examiner respectfully disagrees. Lack of unity of invention may be directly evident "*a priori*," that is, before considering the claims in relation to any prior art, or may only become apparent "*a posteriori*," that is, after taking the prior art into consideration. If it can be established that a single feature or a group of features common to both independent claims is

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known, then there is lack of unity *a posteriori*, since the single feature or group of features common to both independent claims is not a technical feature that defines a contribution over the prior art (see MPEP 1850 (II)).

Furthermore, since the instant application entered into the national phase before the USPTO based on a PCT application that the criteria identified for proper requirement for restriction as set forth in Section 803 of the MPEP, such as serious burden of search, are not applicable to the instant application.

The requirement is still deemed proper and is therefore made FINAL.

Response to Arguments

1. Applicant's arguments filed 21 July 2009 have been fully considered but they are not persuasive.

The applicant argues that neither Quenzer nor Schulze is directed to a method for creating a curved or contoured surface on at least one side of a flat glass-like substrate in the first instance, not a follow-up treatment on a preexisting contoured lens surface.

The examiner respectfully disagrees. Quenzer does disclose a method of structuring surfaces of micro-mechanical and/or micro-optical components and/or functional elements consisting of glass or glass-type materials (column 2, lines 5-7). However, micro-optical components can be interpreted as embodying a contoured lens surface. For example, US Patent 6,974,264 discloses Micro optical elements such as a lens, a plane mirror, a concave mirror (column 1, lines 13-14). Thus the method disclosed by Quenzer can be interpreted as a follow-up treatment on a preexisting contoured lens surfaces, such as a micro-optical element.

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The applicant also argues that Quenzer fails to disclose, or even suggest, the elimination of an elliptical gradient present on the curvature or contour of a surface of a pre-existing or a preformed optical lens.

The examiner respectfully disagrees. Since the process described by instant application is obvious in view of Quenzer in view of Schulze, the elliptical gradient is inherent to the invention disclosed by Quenzer in view of Schulze. This is affirmed by applicant in the applicant's disclosure, wherein the applicant states this extremely steep elliptical gradient of the microlens in the edge region stems from a *process-inherent characteristic* typical of glass flow processes and therefore occurs unfailingly. Moreover, similar extremely steep elliptical gradients can also be observed in microlenses produced from thermoplastic lens material by means of a so-called contactless hot stamping process (Disclosure, page 2, paragraph 2).

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

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4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
3. Claims 1-11 and 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 6,951,119 (Quenzer hereinafter) and in view of *Compact Self-Aligning Assemblies with Refractive Microlens Arrays made by Contactless Embossing* (Schulze hereinafter).

Regarding claim 1, Quenzer discloses a method for treatment of the contour of the surface of at least one optical lens, which is made of glass or a glass-type material (Quenzer, column 1, lines 1-3), placing a means perfectly matching a plane section of the optical lens (Quenzer, Figure 1, component 2), and heating said optical lens to a temperature of at least the transformation temperature of said glass or glass-type material (Quenzer, column 3, lines 46-48), wherein pressure equalization prevails between said convex lens surface and said lens underside (Quenzer, column 3, lines 23-24), and after a certain period of time, during which said optical lens undergoes temperature treatment and subsequent cooling below said transformation temperature (Quenzer, column 4, lines 33-36), said means is removed from said optical lens (Quenzer, column 4, lines 36-40).

Quenzer does not specifically state that the at least one optical lens has a convex lens surface delimited by a circumferential line abutting on a plane section surrounding said circumferential line and which has a lens underside facing the convex lens surface. Quenzer, furthermore, does not specifically state that the mounting tool would be placed along said circumferential line of the optical lens on said plane section is placed a means perfectly matching said circumferential line and at least laterally bordering said convex lens surface.

Schulze, discloses that at least one optical lens have a convex lens surface delimited by a circumferential line abutting on a plane section surrounding said circumferential line and which

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has a lens underside facing the convex lens surface (Schulze, Figure 2). Schulze, furthermore, discloses that the mounting tool would be placed along said circumferential line of the optical lens on said plane section is placed a means perfectly matching said circumferential line and at least laterally bordering said convex lens surface (Schulze, Figure 3).

It would have been obvious for one of ordinary skill in the art to apply the microlens array and mounting tool, as disclosed by Schulze, to the method disclosed by Quenzer. The rationale to do so would have been the motivation to provide a highly precise, cost effective production method for the production of both microlenses and alignment structures with the main advantage being easy replication (Schulze, page 31, paragraph 2).

Regarding claim 10, Quenzer does not specifically state that the at least one optical lens comprises a one-piece continuous array-like microlens having a multiplicity of single optical microlenses, which are spaced apart, by plane sections, a means matching the arrangement and size of the circumference of the single microlenses is provided as a template, which is placed at least partly on said plane sections and surrounds said circumferential lines of said individual microlenses, and during said temperature treatment all said microlenses are heated uniformly and homogeneously.

Schulze, however, discloses that the at least one optical lens comprises a one-piece continuous array-like microlens having a multiplicity of single optical microlenses, which are spaced apart, by plane sections (Schulze, Figure 3, microlens component), a means matching the arrangement and size of the circumference of the single microlenses is provided as a template, which is placed at least partly on said plane sections and surrounds said circumferential lines of said individual microlenses (Schulze, Figure 3, LIGA mounting tool component), and during

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said temperature treatment all said microlenses are heated uniformly and homogeneously (Schulze, page 27, paragraph 2).

It would have been obvious for one of ordinary skill in the art to apply the method, as disclosed by Quenzer, to the microlens array and mounting tool disclosed by Schulze. The rationale to do so would have been the motivation to achieve a cost-effective solution for the alignment process of micro-optic components, which usually result in very high costs (Schulze, page 25, paragraph 5).

Regarding claims 18 and 19, Quenzer discloses that the optical lens is a microlens (Quenzer, column 2, line 6) but not that the microlenses are equidistantly spaced.

Schulze discloses that the microlenses are equidistantly spaced (Schulze, Figure 3).

It would have been obvious for one of ordinary skill in the art at the time of the invention to have the microlens, as disclosed by Quenzer, equidistantly spaced, as disclosed by Schulze. The rationale to do so would have been the motivation to achieve good uniformity of focal length and homogeneity of high quality within the arrays (Schulze, page 28, paragraph 2 and 3).

Regarding claim 2, Quenzer discloses that the temperature and the period of time of said temperature treatment are selected according to the degree of change of the surface contour (Quenzer, column 2, lines 46-49).

Regarding claims 3 and 4, Quenzer discloses varying the pressure acting on said convex lens surface during said temperature treatment by changing the gas pressure, respectively air pressure, by stating that when the partial pressure, of air or nitrogen (Quenzer, column 9, line 14), inside the interstices exceeds the surrounding atmospheric pressure during the subsequent

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flow process at elevated temperatures, which can be interpreted to mean that the pressure steadily increases during the temperature treatment (Quenzer, column 9, lines 15-20).

Regarding claim 5, Quenzer discloses pressing said means firmly against the planar glass material to create an intimate bond (Quenzer, column 9, lines 7-10).

While Quenzer does not specifically disclose using force to press firmly, it would be necessary to use force to create an intimate bond. Furthermore, Quenzer does not disclose pressing said means against said circumferential line, but it would have been obvious to one of ordinary skill in the art at the time of the invention that in order to treat the existing convex contours of the glass surface, it would be necessary to press said means against said circumferential line.

Regarding claims 6 and 7, Quenzer discloses that the optical lens is produced by means of a glass-flow process (Quenzer, column 3, lines 50-57) and has as a result of said process an extremely steep elliptical gradient in the region of said circumferential line (Quenzer, Figures 2 and 5), and said temperature treatment is conducted in conjunction with said means bordering said circumferential line in such a manner that said extremely steep elliptical gradient is reduced or completely eliminated and in such a manner that the lateral geometric dimensions of said optical lens are retained (Quenzer, column 8, lines 22-35).

Regarding claim 8, Quenzer discloses that the convex lens surface of said optical lens is raised above a horizontal plane during temperature treatment (Quenzer, Figure 5 and column 8, lines 56-65).

Regarding claim 9, Quenzer discloses that said means is brought into contact with said optical lens without wetting the surface (Quenzer, column 6, lines 2-7).

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Regarding claim 11, Quenzer discloses that said temperature treatment occurs in such a manner that a reduction of said convex lens surface stems solely from the surface tensions acting along said convex lens surface, with the lens material being forced out of the regions of said exceedingly steep elliptical gradient on the convex-side into other regions of the lens body (Quenzer, column 5, lines 30-41).

Regarding claim 20, since the process described by claim 1 is obvious in view of Quenzer in view of Schulze, the elliptical gradient is inherent to the invention disclosed by Quenzer in view of Schulze. This is affirmed by applicant in the applicant's disclosure, wherein the applicant states this extremely steep elliptical gradient of the microlens in the edge region stems from a *process-inherent characteristic* typical of glass flow processes and therefore occurs unfailingly. Moreover, similar extremely steep elliptical gradients can also be observed in microlenses produced from thermoplastic lens material by means of a so-called contactless hot stamping process (Disclosure, page 2, paragraph 2).

Conclusion

1. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period

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will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

2. Any inquiry concerning this communication or earlier communications from the examiner should be directed to YANA BELYAEV whose telephone number is (571)270-7662. The examiner can normally be reached on M-Th 8:30am - 6pm; F 8:30 am- 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on (571) 272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Y. B./
Examiner, Art Unit 1791

/Steven P. Griffin/
Supervisory Patent Examiner, Art Unit
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